

Claims

1. A urethane composition comprising the reaction product of:
 - a. An aliphatic polyisocyanate having three or more isocyanate groups; and
 - b. A fluorochemical of the formula $R_f-SO_2N(R^1)-R^2-Z$;
wherein R_f a perfluoroalkyl or perfluoroheteroalkyl group having from 3 to about 6 carbon atoms,
 R^1 is a lower alkyl group,
 R^2 is an alkylene or heteroalkylene group, and
 Z is an isocyanate-reactive functional group, and
said fluorochemical is in an amount sufficient to react with at least about 50% of the available isocyanate groups
2. The composition of claim 1 comprising the further reaction product of an aliphatic monofunctional compound.
3. The composition of claim 2 wherein said aliphatic monofunctional compound is of the formula $R'''-Z$, wherein R''' is an aliphatic group and Z is an isocyanate-reactive functional group.
4. The composition of claim 3 comprising compounds of the formula $(R_f^*)_nA(NHCO-Z'R''')_{m-n}$,
wherein R_f^* is $R_f-SO_2N(R^1)-R^2-Z'$,
 Z' is the residue of Z ,
 A is the residue of said aliphatic isocyanate, having valency m ,
 R''' is an aliphatic radical, and
 n (average) is at least 1.5.
5. The composition of claim 1 wherein
 R_f a fluorinated carbon chain having from 3 to about 6 carbon atoms,
 R^1 is a $-H$ or $-CH_3$,

R² is an alkylene group having 1 to 3 carbon atoms, and
Z is -OH.

6. The composition of claim 3 wherein the amount of aliphatic monofunctional compound is
in an amount sufficient to react with the remaining available isocyanate groups.

7. The composition of claim 3 wherein the amount of aliphatic monofunctional compound is
in an amount sufficient to react with 15% or less of the available isocyanate groups.

8. The composition of claim 1 wherein the amount of fluorochemical is in an amount
sufficient to react with 75% or more of the available isocyanate groups.

9. The composition of claim 1 wherein R_f is a perfluorinated alkyl group.

10. The composition of claim 1 further comprising a hydrophilic anti-staining compound.

11. The fibrous substrate treatment composition comprising the urethane composition of
claim 1 and a solvent.

12. The treatment composition of claim 11 comprising from about 0.05 to 10 weight percent
of the urethane composition.

13. A method for imparting stain-release characteristics to a fibrous substrate comprising the
steps of:

(a) applying a treatment composition of claim 12, and.

(b) allowing the treatment composition to cure.

14. The method of claim 14 wherein said treatment composition is applied in an amount
sufficient to provide between 0.05% and 3% solids on fiber.

15. The method of claim 14 wherein said composition is cured at ambient temperature.

16. An article comprising:

a fibrous substrate having a cured coating derived from at least one solvent and a chemical composition of claim 1.

17. The composition of claim 1 further comprising a surfactant.